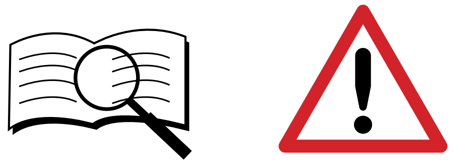
TORK®
valve & automation
high quality



PULSE VALVE USER'S MANUAL

SMS®

SMS SANAYİ MALZEMELERİ ÜRETİM VE SATIŞI A.Ş.



Read the instructions before use!

CONTENTS

SMS SANAYİ MALZEMELERİ ÜRETİM VE SATIŞI A.Ş.
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1. PRODUCT OVERVIEW

a. Intended Use of the Product

Pulse valves are designed for using on dust collecting or and the like systems. It's used mostly for cleaning and preventing from being hardened the gathered dust on jet filters at such industries like thermal power plants, detergent, glass; feed, cement, iron and steel.



Figure 1: Pulse Valve Product Group

Pulse valves have a compact design, high reliability, fast flow rate, high quality and performance. These valves have a long life as well. In system applications, pulse valves have efficient solutions by their ultra fast switching performances. Their high qualified diaphragms are high resistive to erosion. They can work under heavy conditions and they are guaranteed on these heavy conditions.

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b. Product Coding System

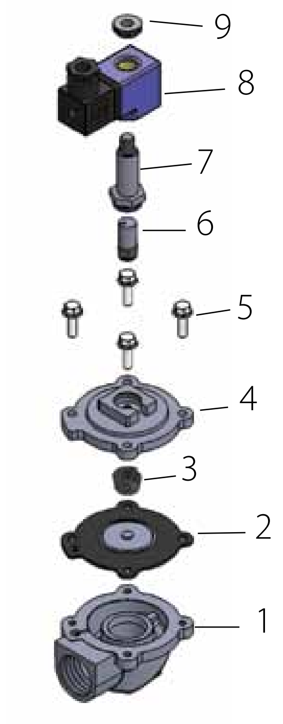
PL XX XX . XX

10	Standard Pulse
20	Power Pulse

10	Standard Pulse Valve With Coil
20	Remote Controlled Pulse Valve Without Coil
30	Coupling Connection Standard Pulse Valve With Coil
40	Coupling Connection High Pressure Pulse Valve With Coil
50	Coupling Connection Standard Pulse Valve Without Coil
60	Coupling Connection High Pressure Pulse Valve Without Coil

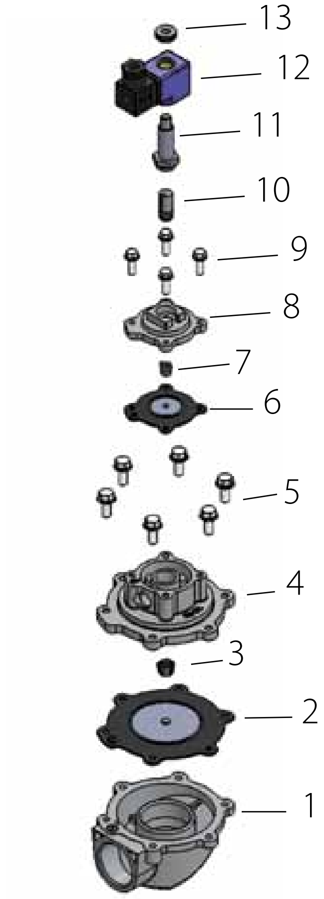
SIZES	
00	1/8"
01	1/4"
02	3/8"
03	1/2"
04	3/4"
05	1"
06	11/4"
07	11/2"
08	2"
09	2 1/2"
10	3"

c. List of Exploded Pictures and Parts



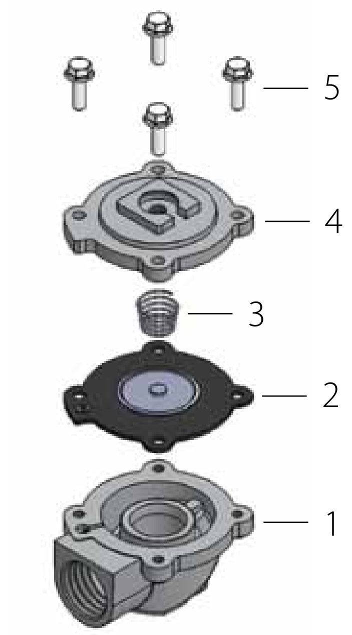
No	Part Name
9	KNURLED NUT
8	COİL
7	TUBE
6	CORE
5	BOLT
4	COVER
3	SPRING
2	DIAPHRAGM
1	BODY

Figure 2: Standard Pulse Valve With Coil G3/4", G1"



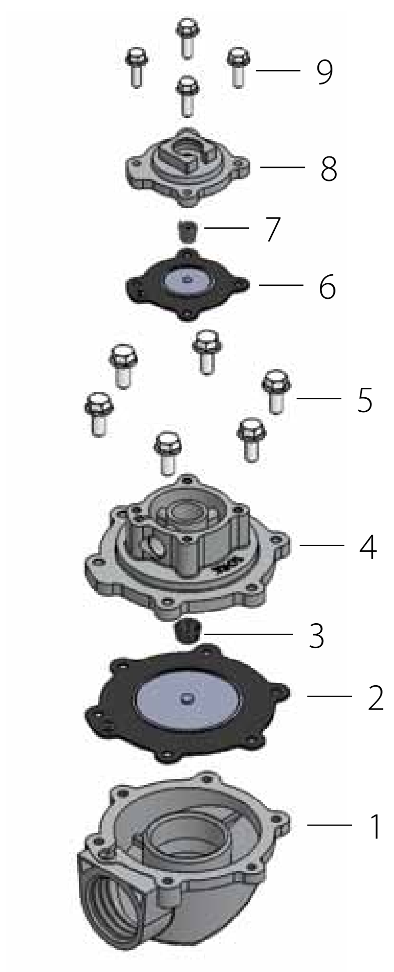
No	Part Name
13	KNURLED NUT
12	COIL
11	TUBE
10	CORE
9	BOLT
8	COVER
7	SPRING
6	DIAPHRAGM
5	BOLT
4	COVER
3	SPRING
2	DIAPHRAGM
1	BODY

Figure3: Standard Pulse Valve With Coil G1 ½", G2", G2 ½", G3"



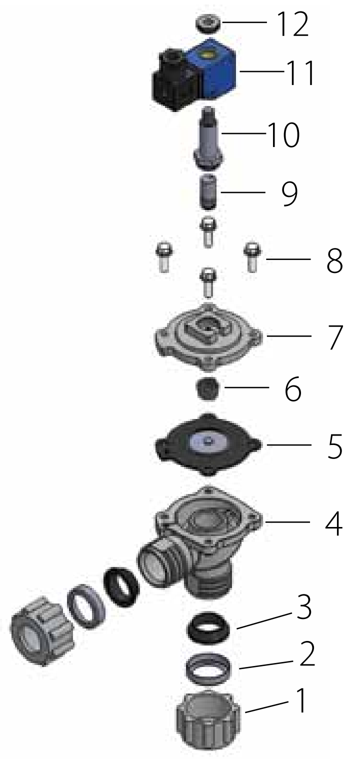
No	Part Name
5	BOLT
4	COVER
3	SPRING
2	DIAPHRAGM
1	BODY

Figure 4: Remote Controlled Pulse Valve Without Coil G3/4", G1"



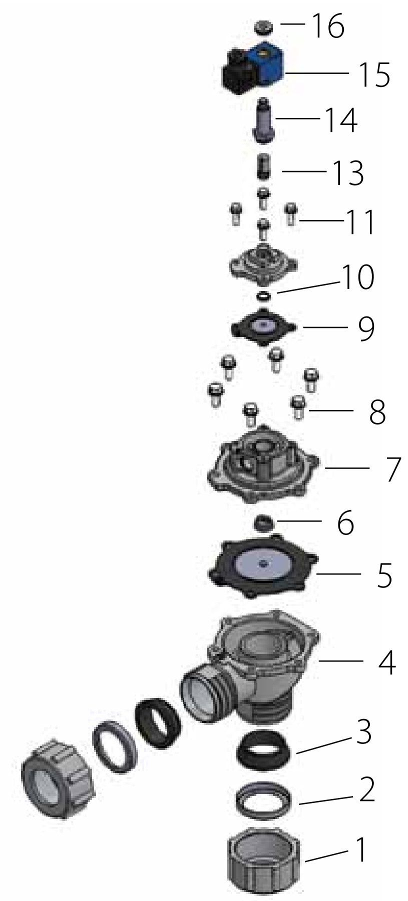
No	Part Name
9	BOLT
8	COVER
7	SPRING
6	DIAPHRAGM
5	BOLT
4	COVER
3	SPRING
2	DIAPHRAGM
1	BODY

Figure 5: Remote Controlled Pulse Valve Without Coil G1 ½", G2", G2 ½", G3"



12	KNURLED NUT
11	COIL
10	TUBE
9	CORE
8	BOLT
7	COVER
6	SPRING
5	DIAPHRAGM
4	BODY
3	SEAL
2	SHEET METAL
1	FITTING
No	**Part Name**

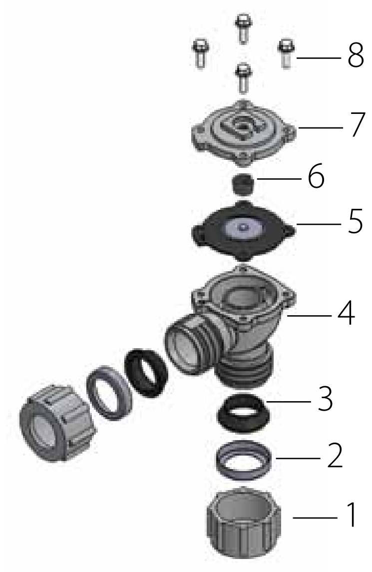
Figure 6: Coupling Connection Standard Pulse Valve With Coil   G3/4", G1", G1 ½"



16	KNURLED NUT
15	COIL
14	TUBE
13	CORE
12	BOLT
11	COVER
10	SPRING
9	DIAPHRAGM
8	BOLT
7	COVER
6	SPRING
5	DIAPHRAGM
4	BODY
3	SEAL
2	SHEET METAL
1	FITTING
No	**Part Name**

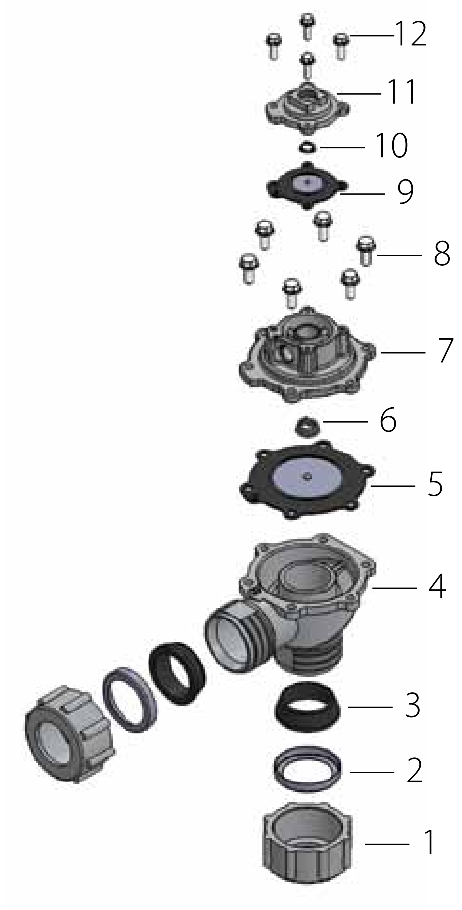
Figure 7: Coupling Connection High Pressure Pulse Valve With Coil G1 ½"

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8	BOLT
7	COVER
6	SPRING
5	DIAPHRAGM
4	BODY
3	SEAL
2	SHEET METAL
1	FITTING
No	**Part Name**

Figure 8: Coupling Connection Standard Pulse Valve Without Coil G3/4", G1", G1 ½"



12	BOLT
11	COVER
10	SPRING
9	DIAPHRAGM
8	BOLT
7	COVER
6	SPRING
5	DIAPHRAGM
4	BODY
3	SEAL
2	SHEET METAL
1	FITTING
No	**Part Name**

Figure 9: Coupling Connection High Pressure Pulse Valve Without Coil G1 ½"

d. Technical Specification

Type	Pulse Valve
Connection	Gear, coupling connection, flange
Position	Normally Closed
Way Unit Quantity	2/2
Fluid	Air
Minimum Operating Differential Pressure	0,5 Bar
Operating Temperature	-10°C/+80°C
Sealing Material	NBR, NEOPREN
Metal Material	Aluminum
Interior Parts Supplies	Stainless Steel
Shading Ring	Copper
Coil	AC 12V, 24V, 48V, 110V, 230V DC 12V, 24V, 48V, 110V
Opening time	100 ms
Closing time	100 ms
Direction of Mounting	Flow, should be the direction of the arrow direction.

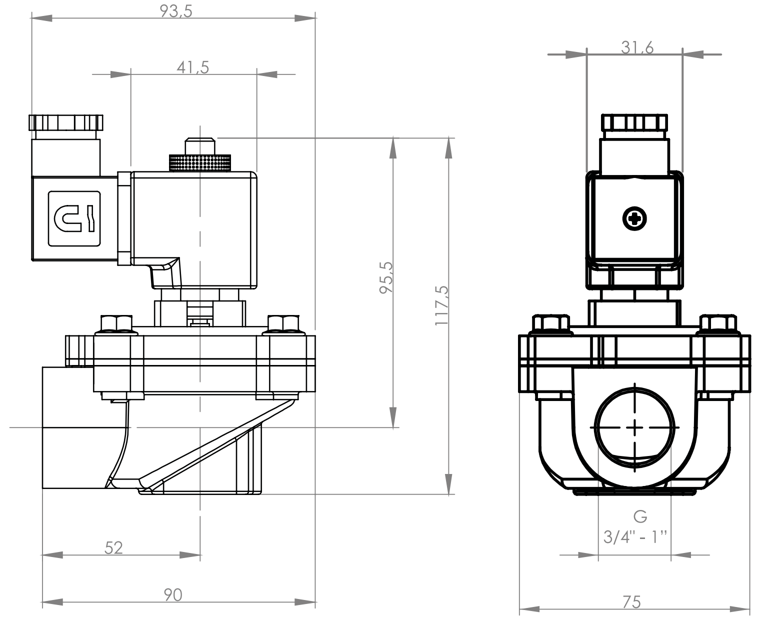


Figure 10: Standard Pulse Valve With Coil Sizes G3/4", G1"

Valve Type / Order No	Connection Size	Orifice	Pressure Max	Pressure Min	KV	Fluid Temperature Min	Fluid Temperature Max	Seal	Weight
PL1010	**G**	**mm**	**bar**	**bar**	**lt/min**	**˚C**			**(kg)**
PL1010.04	3/4"	25	0.5	8	150	-10	80	NEOPREN	0,69
PL1010.05	1"	25	0.5	8	270	-10	80	NEOPREN	0,68

Table 1: General Specifications of Standard Pulse Valve With Coil G3/4", G1"

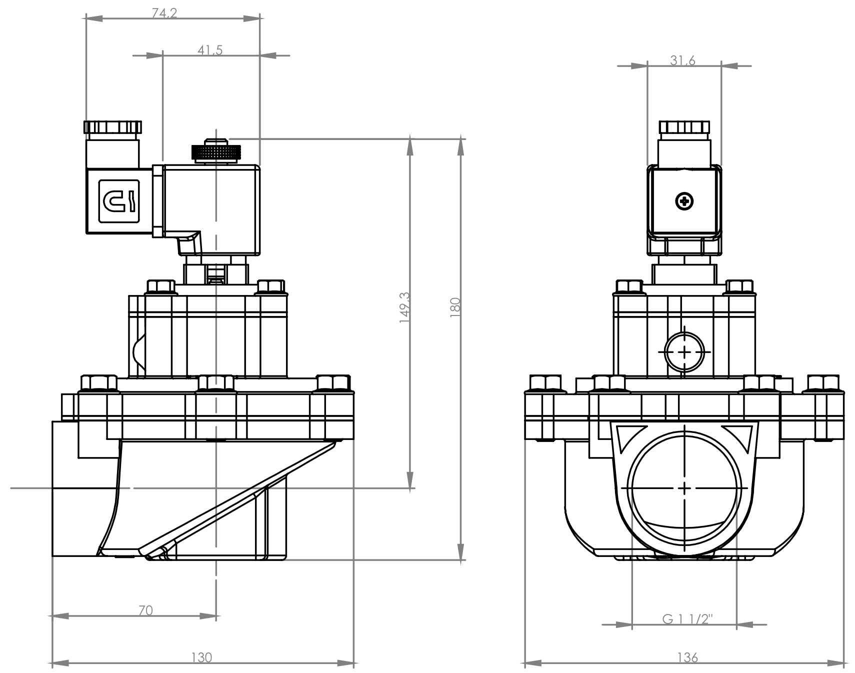


Figure 11: Standard Pulse Valve With Coil Sizes G1 ½", G2", G2 ½", G3"

Valve Type / Order No	Connection Size	Orifice	Pressure Max	Pressure Min	KV	Fluid Temperature Min	Fluid Temperature Max	Seal	Weight
PL1010	**G**	**mm**	**bar**	**bar**	**lt/min**	**˚C**			**(kg)**
PL1010.07	1 1/2"	40	0.5	8	774	-10	80	NEOPREN	1.40
PL1010.08	2"	50	0.5	9,8	1065	-10	80	NBR	2.25
PL1010.09	2 1/2"	65	0.5	9,8	1378	-10	80	NBR	3.47
PL1010.10	3"	80	0.5	9,8	2040	-10	80	NBR	3.8

Table 2: General Specifications of Standard Pulse Valve With Coil G1 ½", G2", G2 ½", G3"

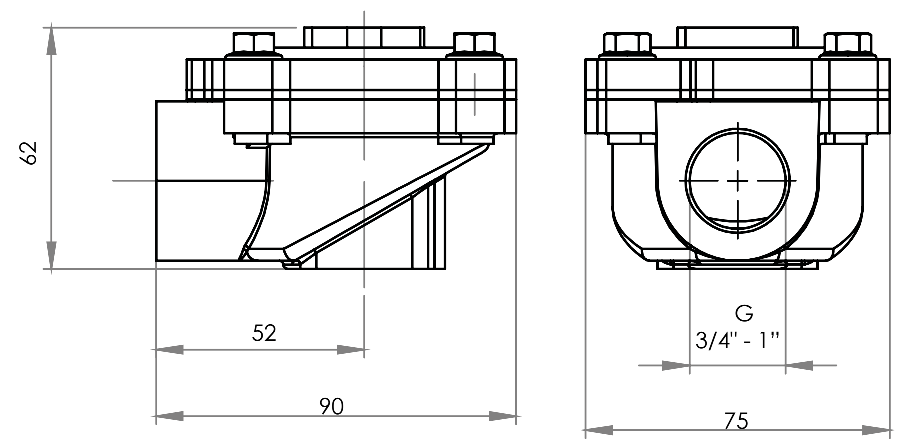


Figure 12: Remote Controlled Pulse Valve Without Coil Sizes G3/4", G1"

Valve Type / Order No	Connection Size	Orifice	Pressure Max	Pressure Min	KV	Fluid Temperature Min	Fluid Temperature Max	Seal	Weight
PL1020	**G**	**mm**	**bar**	**bar**	**lt/min**	**˚C**			**(kg)**
PL1020.04	3/4"	20	0.5	8	150	-10	80	NEOPREN	0,44
PL1020.05	1"	25	0.5	8	270	-10	80	NEOPREN	0.43

Table 3: General Specifications of Remote Controlled Pulse Valve Without Coil G3/4", G1"

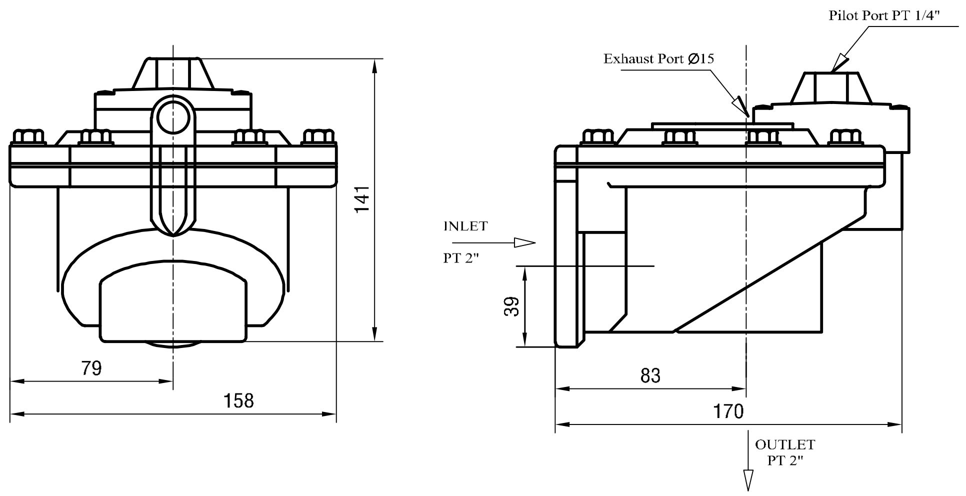
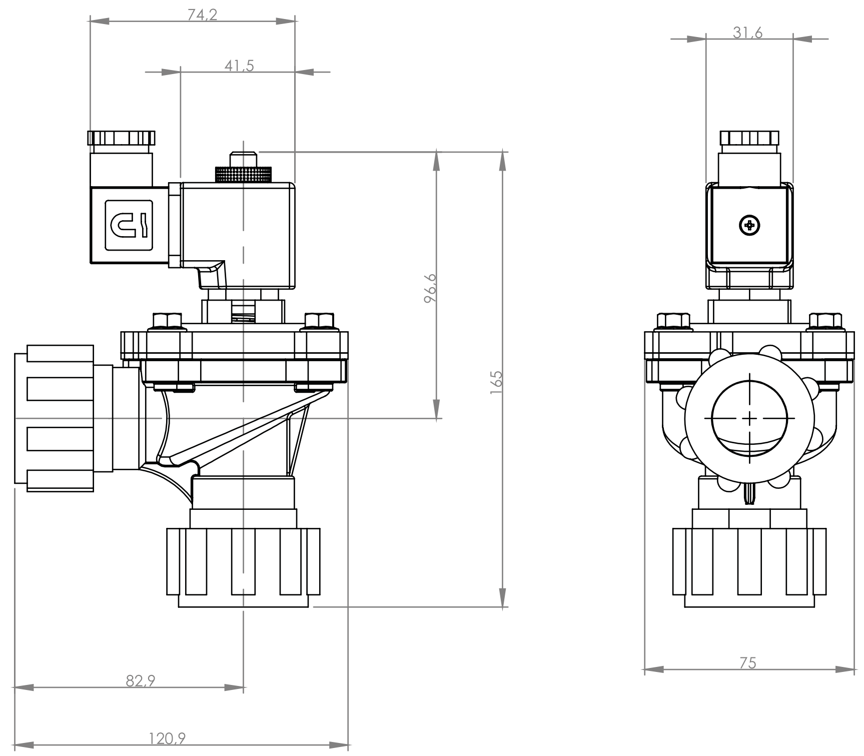


Figure 13: Remote Controlled Pulse Valve Without Coil Sizes G1 ½", G2", G2 ½", G3"

Valve Type / Order No	Connection Size	Orifice	Pressure Max	Pressure Min	KV	Fluid Temperature Min	Fluid Temperature Max	Seal	Weight
PL1020	**G**	**mm**	**bar**	**bar**	**lt/min**	**˚C**			**(kg)**
PL1020.07	1 1/2"	40	0.5	8	774	-10	80	NEOPREN	1,04
PL1020.08	2"	50	0.5	8.5	1065	-10	80	NBR	1.9
PL1020.09	2 1/2"	65	0.5	8.5	1378	-10	80	NBR	3.3
PL1020.10	3"	80	0.5	8.5	2040	-10	80	NBR	3.5

Tablo 4: General Specifications of Remote Controlled Pulse Valve Without Coil G1 ½", G2", G2 ½", G3"



Şekil 14: Coupling Connection Standard Pulse Valve With Coil Sizes G3/4", G1", G1 ½"

Valve Type / Order No	Connection Size	Orifice	Pressure Max	Pressure Min	KV	Fluid Temperature Min	Fluid Temperature Max	Seal	Weight
PL1020	**G**	**mm**	**bar**	**bar**	**lt/min**	**˚C**			**(kg)**
PL1030.04	3/4" - 3/4"	20	0.5	9.5	150	-10	80	NBR	0,95
PL1030.05	1" - 1"	25	0.5	9.5	270	-10	80	NBR	1.29
PL1030.07	1 1/2" - 1 1/2"	40	0.5	9.5	774	-10	80	NBR	2.03

Table 5: General Specification of Coupling Connection Standard Pulse Valve With Coil G3/4", G1", G1 ½"

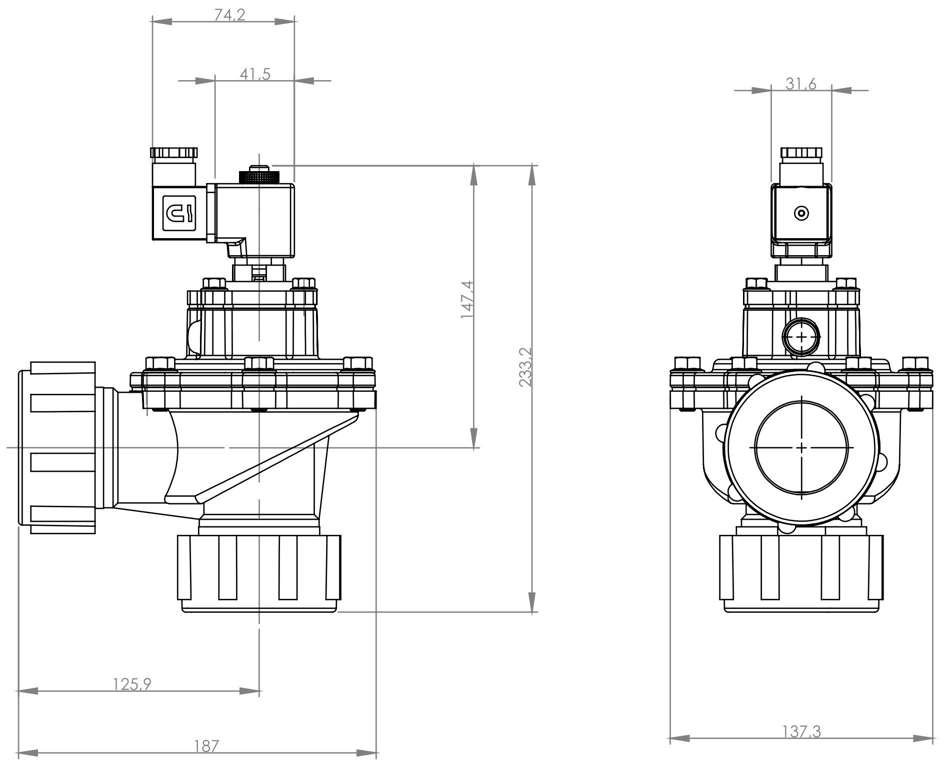
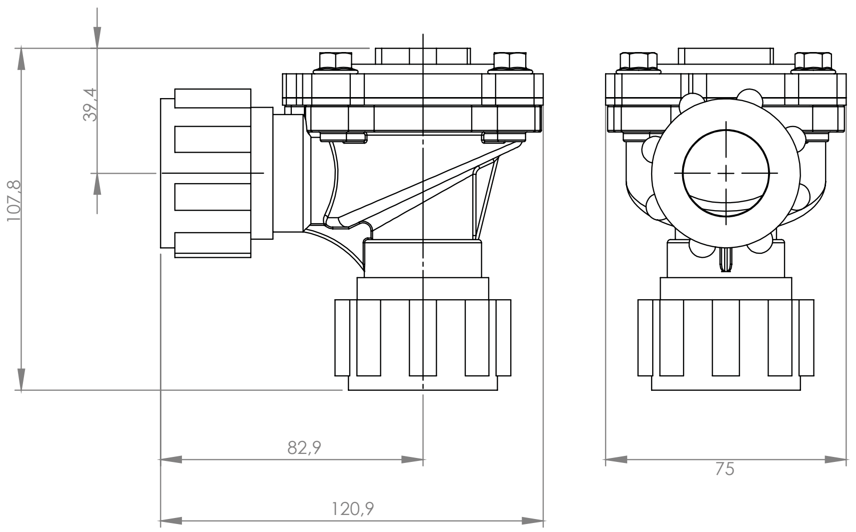


Figure 15: Coupling Connection High Pressure Pulse Valve With Coil Sizes G1 ½"

Valve Type / Order No	Connection Size	Orifice	Pressure Max	Pressure Min	KV	Fluid Temperature Min	Fluid Temperature Max	Seal	Weight
PL1020	**G**	**mm**	**bar**	**bar**	**lt/min**	**˚C**			**(kg)**
PL1040.04	1 1/2" - 1 1/2"	40	0.5	9.8	774	-10	80	NBR	2.11

Tablo 6: General Specification Coupling Connection High Pressure Pulse Valve With Coil G1 ½"



Şekil 16: Coupling Connection Standard Pulse Valve Without Coil Sizes G3/4", G1", G1 ½"

Valve Type / Order No	Connection Size	Orifice	Pressure Max	Pressure Min	KV	Fluid Temperature Min	Fluid Temperature Max	Seal	Weight
PL1020	**G**	**mm**	**bar**	**bar**	**lt/min**	**˚C**			**(kg)**
PL1050.04	3/4" - 3/4"	20	0.5	7.5	150	-10	80	NBR	0,55
PL1050.05	1" - 1"	25	0.5	7.5	270	-10	80	NBR	0.86
PL1050.07	1 1/2" - 1 1/2"	40	0.5	7.5	774	-10	80	NBR	1.67

Table 7: General Specifications of Coupling Connection Standard Pulse Valve Without Coil G3/4", G1", G1 ½"

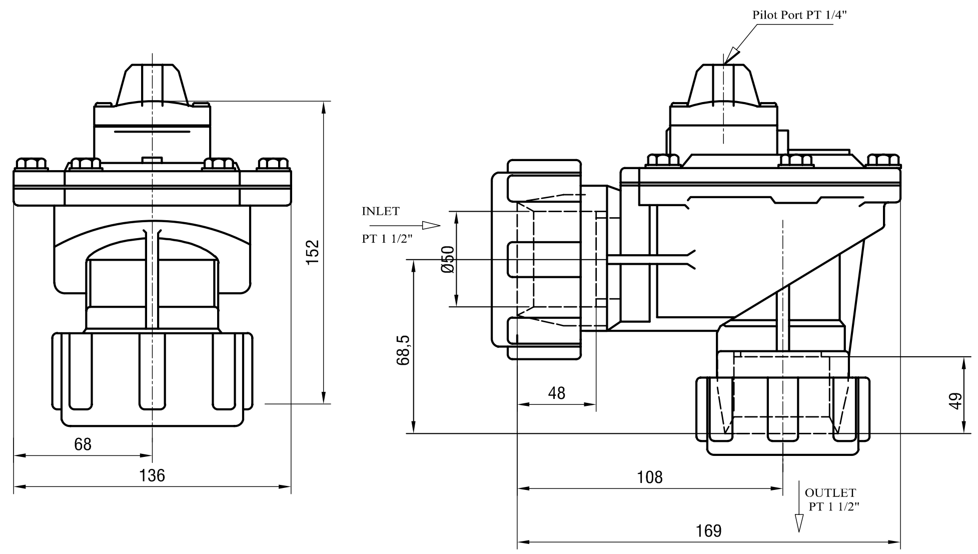


Figure 17: Coupling Connection High Pressure Pulse Valve Without Coil Sizes G1 ½"

Valve Type / Order No	Connection Size	Orifice	Pressure Max	Pressure Min	KV	Fluid Temperature Min	Fluid Temperature Max	Seal	We-ight
PL1020	**G**	**mm**	**bar**	**bar**	**lt/min**	**˚C**			**(kg)**
PL1060.07	1 1/2" - 1 1/2"	40	0.5	8.5	774	-10	80	NBR	1.77

Table 8: General Specification Coupling Connection High Pressure Pulse Valve Without Coil G1 ½"

e. Labeling Details

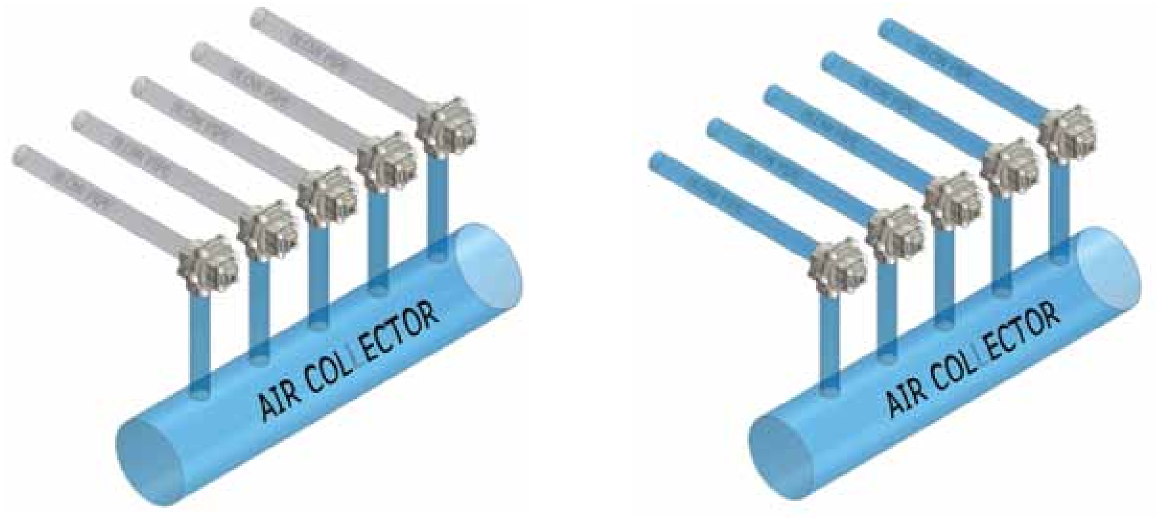


2. PRODUCT OPERATION

While there is no energy on coil if there is no flow on valve it's called Normally Close. Pulse valves are normally closed valves. If supply voltage applied to the coil, the coil becomes an electromagnet and produces a magnetic force. This force makes plunger move. According to this move valve is opened.

Pressurized air in the inlet of the normally closed solenoid valve makes pressure to the diaphragm from down to up. The entire surface of the diaphragm is affected from this pressure equally. Pressurized air passes from 1-2mm diameter hole of the diaphragm to the upper surface of it. So this surface is sustained to the pressure. Two side of the diaphragm and under of solenoid valve's cover are filled entirely by pressurized air and this entrained pressurized air waits on this part. On the solenoid valve's cover there are coil and plunger in the tube controlling the valve. Plunger in the tube by the force of spring on it chokes the entrained airs relief way, too. When the coil energized magnetized plunger in the tube beats the spring force and release the gathered air on the diaphragm to the outside.

At this time, the pressurized air under the diaphragm can't go to the up of the diaphragm in a short time and can't provide the pressure balance. Because of unbalanced pressure diaphragm moves to up and valve becomes open. The shock happens in that way.



(a) (b)

Figure 18: Working of normally closed valve (a) energized, (b) not energized.

This motion happens two times by double diaphragm. Firstly, small diaphragm's air is released. So, small diaphragm releases big diaphragm's air. By this way the differential pressure is provided fast and shock is more violent two times. After shock valve will be normally open. 50-120 milliseconds, coil energized and shocking happens. Shocking rate is determined by customer.

3. PRODUCT INSTALLATION

Before the installation, product and its parts must be controlled. If there is a damage or missing part product does not be received.

Before using the product label must be controlled if product, label, box and other informations are proper to each other. Before the installation the written pressure level on label and line pressure must be controlled if they are proper to each other.

Before the installation it must be controlled if the product's technical specs and the system are proper to each other. The limits written on the label must not be exceeded.

Before the installation, the line that the valve will be installed must be controlled if there is a flow. On the line there must be no flow and there is no possibility of flow during installation.

The coil gets hot in long-term operations. The hot coil may cause burnt if touched.

The power should be connected to the coil via a socket, which should be closed. The open connections may cause electric shock and short-circuits.

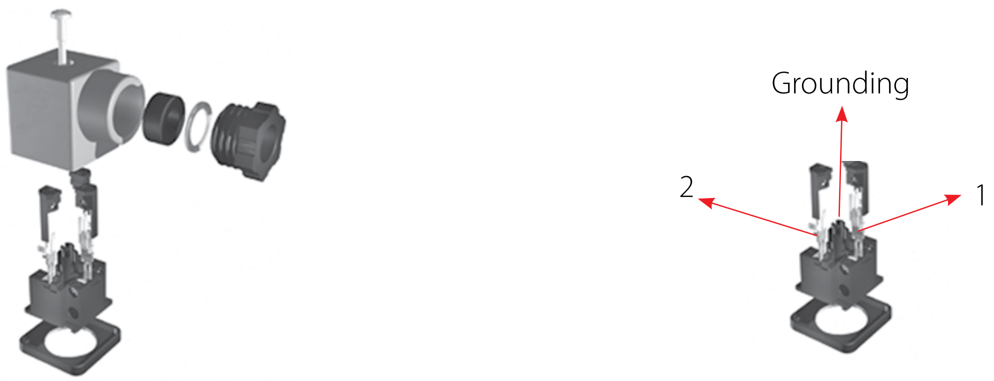
The coil should not run without tube. It means that it should run only when it is connected to the valve along with the tube and core. Otherwise, the conducting wire in the coil will burn and become dysfunctional within a short time.

The coil should be operated along with its own cover nut. The lack of cover nut may also cause damages to the coil or not to run.

Every coil should operate under the voltage limits written on it. The higher or lower voltages may cause damages to the coils or not to run.

The pressure on the pulse valve should be set to zero before removing it from the system.

In critical applications like electronic cards coil must be controlled through a RELAY.



(a) (b)

Figure 19. (a) Connector inner parts, (b) Connector connection points

When connecting the cable ends to the connector, for AC voltages, the phase-neutral ends, and for the DC voltages, the positive (+) and negative (-) terminals should be connected to the number 1 and 2 connections. The earth terminal should be connected with the grounding conductor in the cable, if any. The grounding conductor is the yellow-green wire.



(a) (b)

Figure 20. The position of the connecting cable (a) Right (b) Wrong

Any bending or twisting should not be found with the cable connected to the connector in order to avoid any deficits resulting from any loose contact or short-circuit due to any crush. The cable should be uprights as shown in the Figure 20 (a). In addition, the twists in the connector input may allow humidity to penetrate into the socket. In order to prevent humidity or water to leak into the connector, the diameter of the cable should be in a size that provides sealing.

a- Installation of Pulse Valves to System

TORK pulse valves can be installed with two types. One of them coil and valve's body are separated installation. Second of them coil is on the valve's body. In this type installation to the dust filter system coils are controlled by time relay and time relay controlled by differential pressure relay, too.

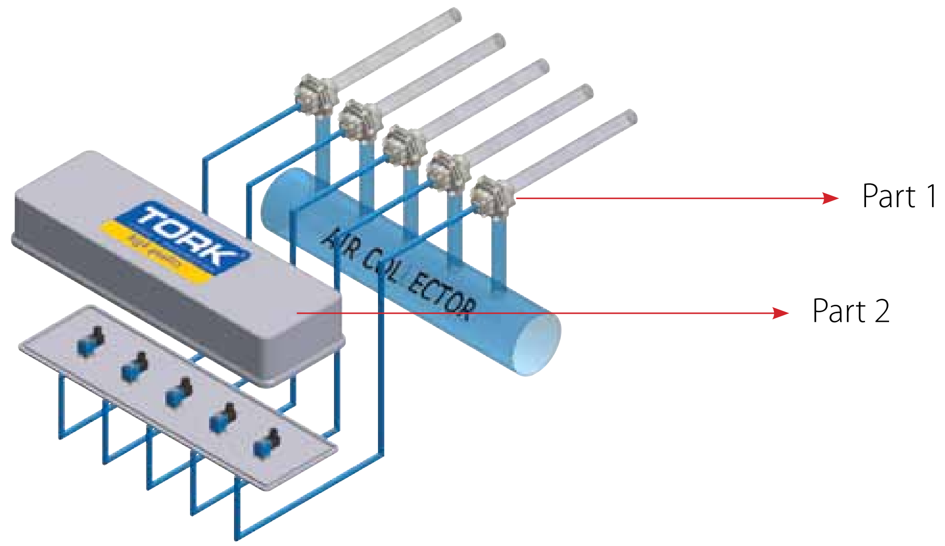


Figure 21. Installation of Pulse Valves to System

If TORK pulse valve installed as two parts, first part is valve body and second part is coil part controlling the valve's body. Separated coil's part installation type is for better protect the coil against water and dust. In this type installation electrical connection is far from valve's body. Coils are put in an aluminum box. Remote controlled pulse valves are without coil type. Also, time relay controls the coils in aluminum box. Here, air control box are linked to pulse valve's control inlet by flexible pipe outgoing from ¼" two way solenoid valves. To make shock in the pulse valve body, the coils in the aluminum box are energized. Pulse valves make shocking in millisecond time rates.

b- Installation of Pulse Valve Timer

Timer of filter cleaner is a microprocessor based instrument used on the jet pulse filters. These filters are commonly used by glass, cement, paint and soil and feed industries. Pulse valves prevent dust spreading and they clean the dust filters. Timer unit is installed to a wall or stayed in a panel. Mounting parts must be stayed to corners. Connection cables passing from cable cover are screwed on to terminals under the unit.

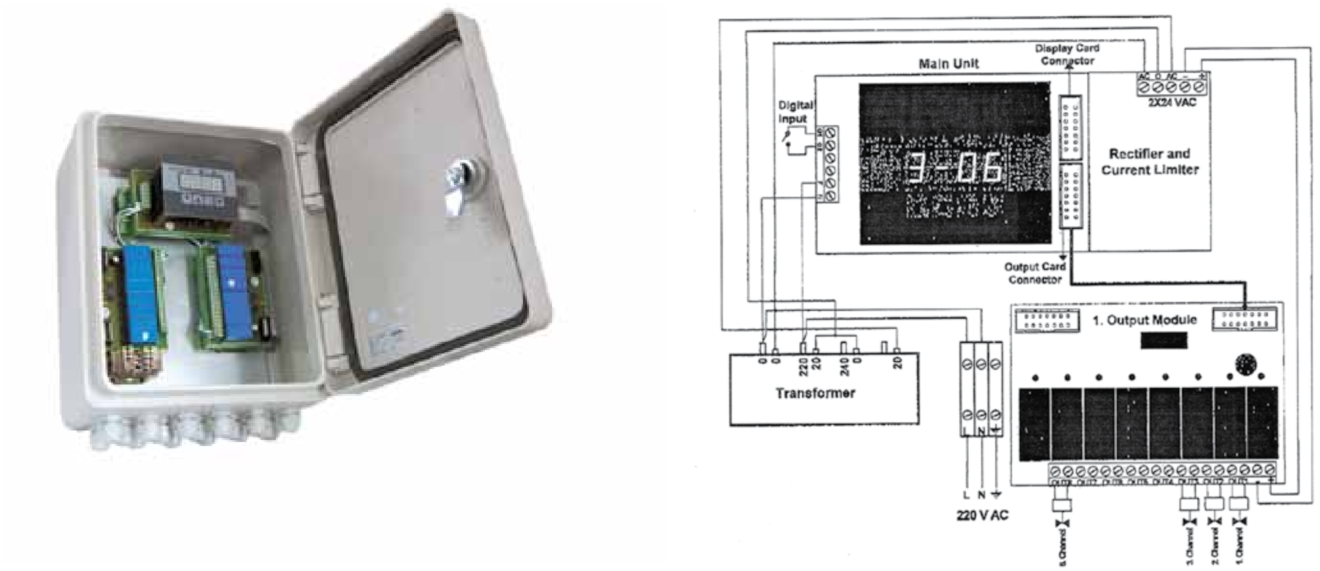


Figure 22: Pulse Valve Timer

C95 Filter Timer is covered by polyester box. Box's dimensions are 250x300x170 mm. regulating the timer and connection diagram can be seen on Figure 19. From 1 to 8 outputs have only one output module.

4. MAINTENANCE OF PRODUCT

According to the exploded drawings, the solenoid valve is opened and the parts are examined and cleaned with the pressurized air. Particularly the core, diaphragm, diaphragm spring and orifice should properly be cleaned. The burrs and residuals on them should be removed. The damaged parts, if any, should be replaced with original TORK brand spare parts. The spare parts may be supplied from our company. Also plungers must be greased with a special oil (Slide 68) having specs like lubricity adjuvant, preventing erosion and holding to surface. Spare parts can be supplied from TORK.

Please be careful not to damage the sensitive inner parts during care and assembly. After any care or maintenance, the electrical connections should be checked, the required electrical measures should be taken and it should be tested if the valve is operating or not.

5. PRODUCT SHIPMENT

During shipment, the valve should not fall down or be exposed to solid impact. The weights that may damage the valve should not be placed on the packages of the pulse valves. The products should be shipped in their original cardboard boxes.

6. WARRANTY PERIOD FOR THE PRODUCT

The warranty period for the TORK brand Pulse Valves is two years. The maximum repair period is 20 days. The warranty does not include products if the valves are used out of scope of the terms of use specified when ordered from our company or in case of breaks resulted from the user's fault when the user try to conduct the care and repair of the product.

To benefit from the warranty, please apply to the manufacturer company with the warranty certificate approved by the company within the warranty period. In the case when you send the pulse valve via courier, please remember to add a description your complaint, the photocopy of your warranty certificate, your address and telephone number.

PRODUCING COMPANY

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Dilovası Kocaeli Turkey
e-mail: tork@sms-tork.com.tr
www.sms-tork.com.tr / www.sms-tork.com



WARRANTY CONDITIONS

1. If there is a fault caused by the production, the manufacturer will repair or replace the defective product in its sole discretion.

2. The warranty period is two (2) years and starts from the date of delivery of the product to consumers.

3. All products, including all sub-parts, covered by our warranty.

4. The maximum repair time is one (1) month and starts from the products' arrival date to SMS factory.

5. Within the warranty period, both in material and workmanship, as well as in case of manufacturing defects, products will be repaired without any charge under any name (labor costs, or the cost of replaced parts).

6. During the warranty period, provided that the products will be exchanged free of charge if the fault is sourced by production.

7. Damages caused by the using of the product contrary to the points listed in the operating instructions are excluded from warranty coverage.

8. If there are complaints about the product please contact customer relations manager firstly.

9. For return or repair-maintenance of products send them to the factory to the customer relations department.

10. If products come to the factory, it doesn't mean acceptance of return and received by officers. Returns accepted, with the approval of the examination will be only after the relevant department managers.

11. Consult to General Directorate of Consumer and Competition Protection of the Ministry Industry and Commerce of Turkey about the issues may arise with warranty certificate.

EXCLUSIONS OF WARRANTY (USAGE DEFECTS)

1. Malfunctions occurring after the expiration of the statutory warranty,

2. The faults caused by improper use of the product by the user, (improper using to the instruction manual),

3. Any relevant malfunctions caused by other equipment in use,

4. Changes and damages not caused by the product manufacturer; for example, the case of the opening of the product by not authorized workshops,

5. All failures depend on the system (electricity, air, etc),

6. Failures depend on the intervention of unauthorized service,

7. Products with damaged or destroyed warranty label,

8. In case of damage to outer surface of the product,

9. The faults in the caused by falling, hit, etc,

10. Faults occurred on dusty, damp, extreme heat or cold environments,

11. Faults caused by natural disasters such as flood, fire, earthquake, lightning, etc,

12. Faults caused by electrostatic discharge (ESD) damage.

www.sms-tork.com.tr

TORK valve & automation high quality

WARRANTY CERTIFICATE

Manufacturer : SMS SANAYİ MALZEMELERİ ÜRETİM VE SATIŞI A.Ş.

Adres : Head Office: Bostancı Yolu Kuru Sokak No:16 Yukarı Dudullu
34776 Ümraniye İstanbul TURKEY
Tel: +90 216 364 34 05 Fax: +90 216 364 37 57
Plant: İMES OSB. 5. Cadde No: 6 Çerkeşli OSB Mah. Dilovası Kocaeli TURKEY
Tel: +90 262 290 20 20 Fax: +90 262 290 20 21

Product : PULSE VALVE

Trade Mark : TORK

Model : ....

Serial Number : ....

Delivery Place & Date : ....

Warranty Period : 2 Years

Max. Repair Time : 20 working days

Seller / Distributor : ....

Address : ....

....

....

....

Manufacturer Representative
Name / Surname: Emre UZUN
Title: Quality Manager
Date: 23.12.2013
Signature:

Seller / Distrubutor Representative
Name / Surname:
Title:
Date:
Signature:

SMS

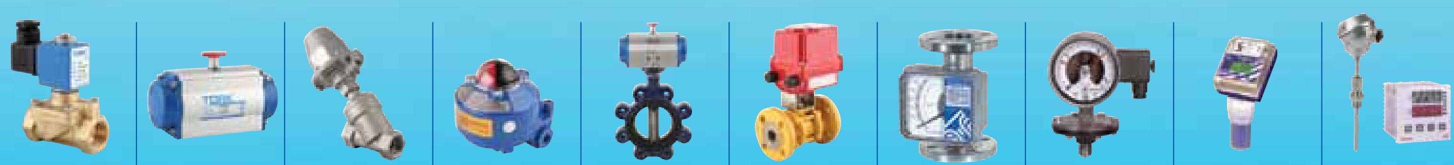
TORK®
valve & automation
high quality



bütün dünyada ...

AFRİKA	AMERİKA	ASYA		AVRUPA		AVUSTRALYA
CEZAYİR	AMERİKA BİRLEŞİK DEV.	AZERBEYCAN	K. KIBRIS TÜRK CUMH.	ALMANYA	İTALYA	AVUSTRALYA
ETİYOPYA	ARJANTİN	BİRLEŞİK ARAP EMİRLİKLERİ	MALEZYA	ARNAVUTLUK	İSPANYA	YENİ ZELLANDA
FAS	DOMİNİK CUMHURİYETİ	ENDONEZYA	PAKİSTAN	AVUSTURYA	İSVEÇ	
FİLDİŞİ SAHİLLERİ	KANADA	GÜNEY KORE	SUUDİ ARABİSTAN	BELÇİKA	KOSOVA	
GÜNEY AFRİKA	KOLOMBİYA	HİNDİSTAN	SURİYE	BULGARİSTAN	LETONYA	
KENYA	PERU	IRAK	ÖZBEKİSTAN	ÇEK CUMHURİYETİ	LİTVANYA	
MISIR	ŞİLİ	İRAN	TAYLAND	DANİMARKA	MALTA	
NİJERYA		İSRAİL	UMMAN	ESTONYA	NORVEÇ	
			VİETNAM	FRANSA	ROMANYA	
				HIRVATİSTAN	RUSYA	
				HOLLANDA	SIRBİSTAN	
				İNGİLTERE	UKRAYNA	
				İRLANDA	YUNANİSTAN	

Solenoid Valf
Pnömatik Aktüatör
Pnömatik Piston Vana
Limit Switch Kutusu
Pnömatik Aktüatörlü Vana
Elektrik aktüatörlü Vana
Debi Ölçü Kontrol
Basınç Ölçü Kontrol
Seviye Ölçü Kontrol
Sıcaklık Ölçü Kontrol



SMS®

SMS SANAYİ MALZEMELERİ ÜRETİM VE SATIŞI A.Ş.

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www.sms-tork.com.tr satis@sms-tork.com.tr

Fabrika: İMES OSB, 5.Cad. No:6 Çerkeşli OSB Mah. Dilovası - Kocaeli
Tel: 0 (262) 290 20 20 Fax: 0 (262) 290 20 21

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